

M05b Structure Of A Magnetic Flux Rope

Liu Yu (Kyoto University)Kurokawa Hiroki (Kyoto University)

A large scale eruption occurred on 2002 July 15 in NOAA 10030, associated with an X3 flare and a fast CME. The location of the most violent eruption is observed to be along the polarity inversion line of the active region. Emerging flux, strong shear, and moving magnetic features were the main characters of the evolution there. High-resolution observations of TRACE 1600A revealed that the eruption was caused by an erupted flux rope. It broke out about 30 seconds preceding its driven flare, which directly caused to the impulsive rise of the soft-ray flux of the solar disk.

Based on data from Halpha, SST, MDI and TRACE 1600A, we believe that the flux rope pre-existed the major event, and it was formed by the emerged twisted magnetic flux. From the Halpha filament morphology and the fine features of the erupted plasmas, we reconstruct the main structure of the twisted flux rope before its eruption. In the model, the difference between the two foot points of the flux rope is the key for us to understand the process of this eruption. We also discuss the importance of the evidence of a twisted flux rope for the current CME model and its driven mechanism.